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ABSTRACT

This study was conducted to establish the existence of grade inflation and show that the ability of college students has remained constant. The second purpose was to examine the effect of grade inflation on the validity of the Scholastic Aptitude Test (SAT). Two types of analyses were performed to gather data. A longitudinal analysis of selected characteristics of SAT scores and grade point average (GPA) over a fifteen year period was conducted. The second analysis focuses on selected schools to evaluate the effect of grade inflation on the validity of the SAT in those colleges. The conclusions reached were increases in GPA were due to grade inflation since there was no concomitant increase in SAT scores. The rate of grade inflation seems to have diminished since 1974 as indicated by levelling-out of GPA means. If grade inflation is seen as the addition of a constant to grades, it will not affect validity since this would not affect the correlation of GPA and SAT. In the presence of declining validity of High School Record, the SAT has become a more valuable tool for predicting academic success in college. (Author/DWH)

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Isaac I. Bejar
Edwin O. Blew

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Grade Inflation and the Validity of the Scholastic Aptitude Test

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Educational Testing Service**

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INTRODUCTION

The term "grade inflation" has often been used in reference to the progressive rise in grade point average (GPA) that colleges have experienced (see Breland, 1976). By analogy to its economic counterpart, grade inflation exists when grades (money supply) increase without a concomitant increase in ability (productivity). The decline in the College Board's Scholastic Aptitude Test (SAT) mean scores that has taken place since the early 1960s suggests that an increase in the ability of college freshmen is an unlikely explanation of the rise in grades during the same period. As pointed out by Beaton, Hilton, and Schrader (1977), however, the decline was observed in candidates for admission to college and there is not certainty that a similar decline has taken place in college freshmen, i.e., in those who were admitted and persisted in college long enough to obtain a meaningful grade point average. Therefore, to establish the existence of grade inflation it is necessary to show that the ability of college students has not risen. One purpose of this study was to clarify this issue by examining the data base of the College Board's Validity Study Service.

The second purpose of this study was to examine the effect of grade inflation on the validity of the SAT across a period of 15 years. One way in which grade inflation can affect the validity of the SAT is by restricting the variability of the criterion score, that is, grade point average. Moreover, if, as suggested by White (1975), teachers are abdicating their evaluative function, it is reasonable to expect that variability in freshman grade point average (GPA henceforth) will not reflect variability in level of performance in college and therefore its correlation with SAT scores will go down, other factors being held constant. Of course "other factors" are never constant. Thus, any effects that may be due to grade inflation only will be confounded irrevocably with the broader context in which the data arose. To alleviate this problem, two types of analyses were performed. First, a longitudinal analysis of selected characteristics of SAT scores and GPA over a period of 15 years was conducted. The second type of analysis focused on a few selected schools with the hope of evaluating the effect, if any, of grade inflation on the validity of the SAT in those colleges.

LONGITUDINAL TREND OF SELECTED VARIABLES

The results presented here are an instance of meta-analysis. According to Glass (1976) meta-analysis refers to the analysis of analyses. One advantage of meta-analysis is the ability to discern trends that may not be as obvious at a more microscopic level of analysis. The analyses here consisted of predictive validity studies done by colleges for classes from 1964 to 1978 as part of the College Board Validity Study Service. (To be included in the analysis, the study had to meet the following conditions: sample size was at least 50; GPA was the criterion and was on a 0-4 scale; students were all freshmen; the first three predictors in the regression equation were High School Rank or Average, SAT-verbal score, and SAT-mathematical score, in any order; and the validity study was done for each sex separately.) The qualifying studies were sorted by year and the studies within each year became the unit of analysis (by contrast, within a given study the student is the unit of analysis.) No effort was made, at this level of analysis, to take into account the possible differential participation of schools (schools may have from one to four studies per year). This potential bias plus the fact that participating schools may not be representative of the population of schools eligible to use the validity service must be kept in mind when interpreting the results.

Because the unit of analysis was the validity study (more precisely, the prediction equation) and not the student, in this part of the analysis when we refer to mean GPA, for example, it refers to the unweighted mean of GPA means for studies within a given year. Similarly SAT-verbal score standard deviation refers to the unweighted mean of the SAT-verbal score standard deviations for studies within a given year. (Correlation coefficients and multiple correlation coefficients should be interpreted in the same way.) The year is defined as year of entrance into college. Thus, the data for 1978, for example, are based on studies done with students entering college in the fall of 1978. Table A shows the number of studies analyzed from 1964 to 1978 as part of the Validity Study Service.

TABLE A. Number of Validity Studies by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	59	70	83	108	50	71	174	57	92	63	79	132	96	106	107
Female	66	79	109	117	52	34	190	58	96	69	80	145	100	116	115

Is There, in Fact, Grade Inflation?

Table 1 shows the mean GPA from 1964 to 1978. Figure 1 plots the same information for males and females. There is evident an increasing trend up to 1974 which confirms the presence of grade inflation at the college level up to that point. After 1974, however, the GPA levels stabilize for both males and females. Figure 1 also exhibits another trend, namely a fairly constant difference in the GPA of males and females. It seems that whatever the cause of grade inflation, it is operating equally for males and females. To the extent that the male-female gap in GPA is due to the different curricula in which the two sexes tend to enroll, grade inflation would seem to be affecting different curricula in the same manner.

TABLE 1. Mean GPA by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	1.92	2.01	2.03	2.11	2.13	2.31	2.30	2.37	2.41	2.43	2.54	2.49	2.57	2.53	2.51
Female	2.09	2.25	2.26	2.31	2.35	2.51	2.57	2.55	2.62	2.59	2.73	2.69	2.73	2.69	2.70

Figure 1. Mean GPA by Sex and Year

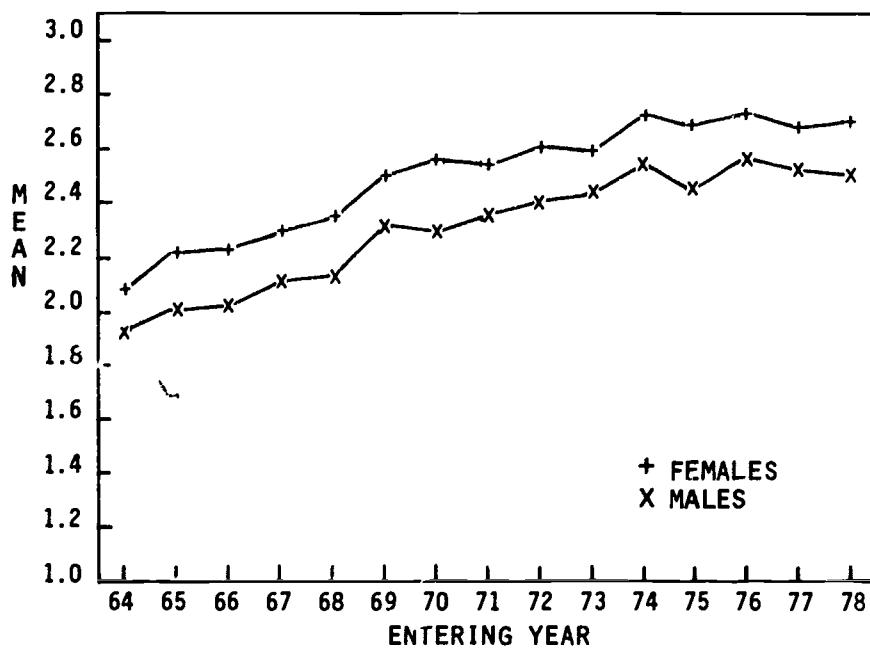
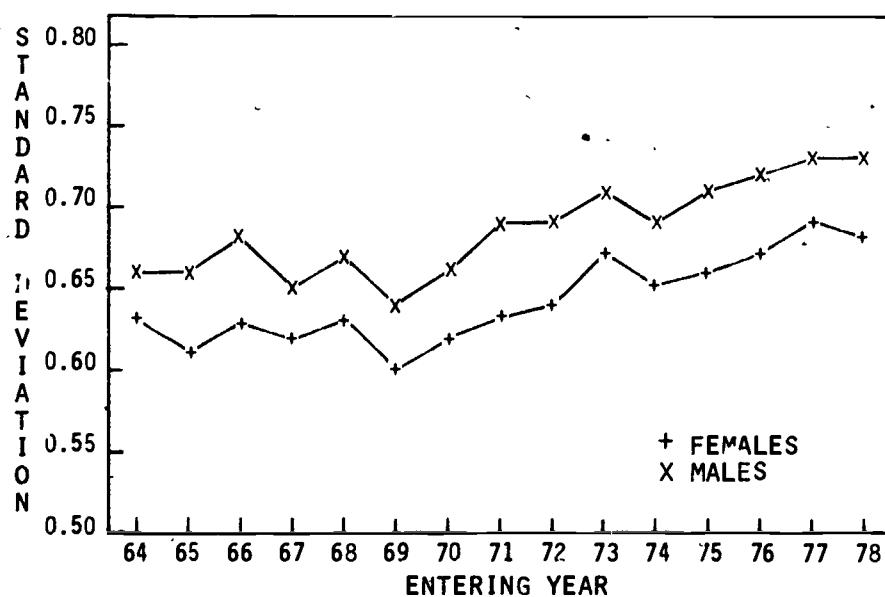


Table 2 and Figure 2 show the standard deviations of GPA for males and females. Figure 2 suggests a nonincreasing trend in standard deviations up to 1969 and an increasing trend from then to 1978. The male-female difference is as uniform as it was for mean GPA, and in every year the standard deviation was larger for males.

TABLE 2. Standard Deviation of GPA by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.66	.66	.68	.65	.67	.64	.66	.69	.69	.71	.69	.71	.72	.73	.73
Female	.63	.61	.63	.62	.63	.60	.62	.63	.64	.67	.65	.66	.67	.69	.68

FIGURE 2. Standard Deviation of GPA by Sex and Year



A possible explanation of the increasing trend in GPA shown in Figure 1 would be that an increasingly more able student body is being admitted to college. A quick examination of Tables 3 and 4, which show the mean SAT-verbal score and SAT-mathematical score (Figures 3 and 4 display the same information), reveals that this explanation is not a valid one. For SAT-verbal score there was initially an increasing trend which peaked with the class entering in 1966. Thereafter mean SAT-verbal score declined. The trend is almost identical for both males and females with the latter having a higher mean in every year. There is also an indication in Figure 3 that the gap in verbal ability between males and females is narrowing.

TABLE 3. Mean SAT-V by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	478	490	496	495	481	483	491	475	486	469	486	470	468	463	459
Female	497	507	518	504	491	498	503	497	490	473	487	471	476	472	466

FIGURE 3. Mean SAT-V by Sex and Year

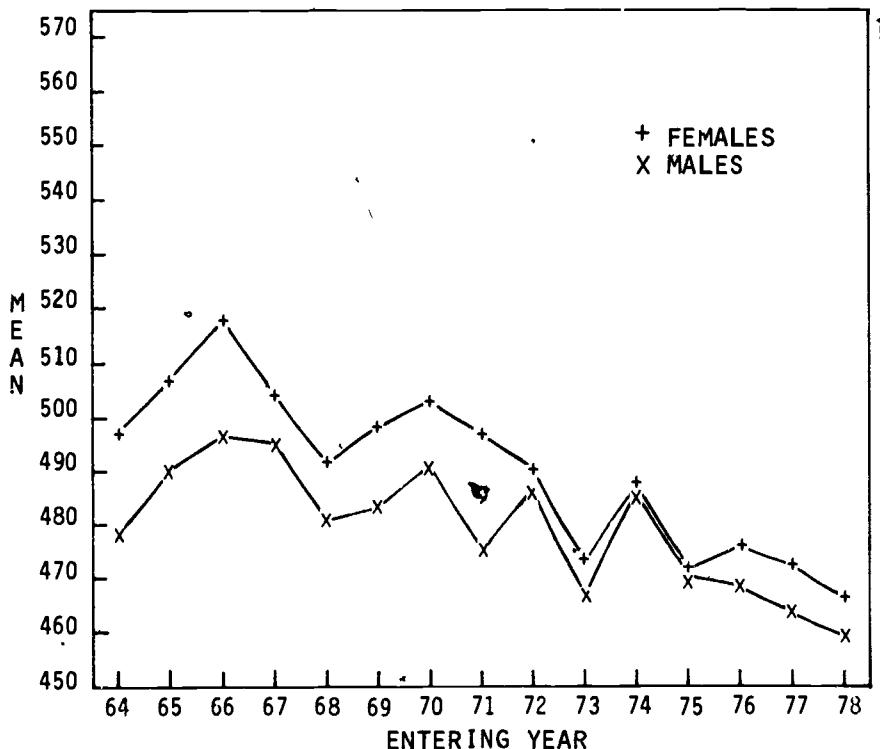
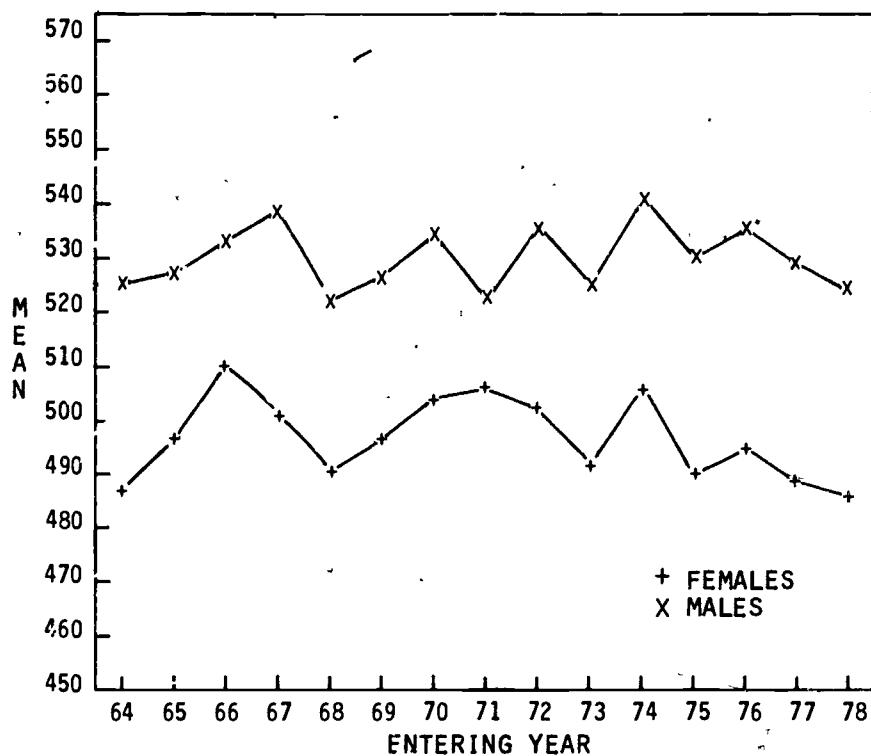


Figure 4 indicates a somewhat irregular but stable trend with a relatively constant difference between males and females in the mean SAT-mathematical score. This difference is larger than the difference noted for SAT-verbal score and does not appear to be narrowing, as does the SAT-verbal score gap.

TABLE 4. Mean SAT-M by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	525	527	533	539	522	527	534	522	536	525	541	530	535	529	524
Female	487	497	510	502	491	497	504	506	502	492	506	490	495	489	486

FIGURE 4. Mean SAT-M by Sex and Year



The standard deviations for SAT-verbal score and SAT-mathematical score are shown in Tables 5 and 6 respectively. The same information is plotted in Figures 5 and 6. The strongest trend seems to be that, beginning with the class entering in 1971, variability in the verbal and quantitative scores increased until 1976 after which it stabilized. The fact that the increase in variability is reflected in both scores and that these data come from enrolled students suggests that the trend may be due to a change in admission policy. For instance, admission policies may have been changed to admit a broader range of talent. However, since these schools are self-selected, it is also possible the trend is due to a sampling artifact.

TABLE 5. Standard Deviation of SAT-V by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	79	79	76	75	77	80	77	83	81	83	82	87	88	87	88
Female	75	74	77	79	79	75	77	78	82	83	83	87	89	90	89

FIGURE 5. Standard Deviation of SAT-V by Sex and Year

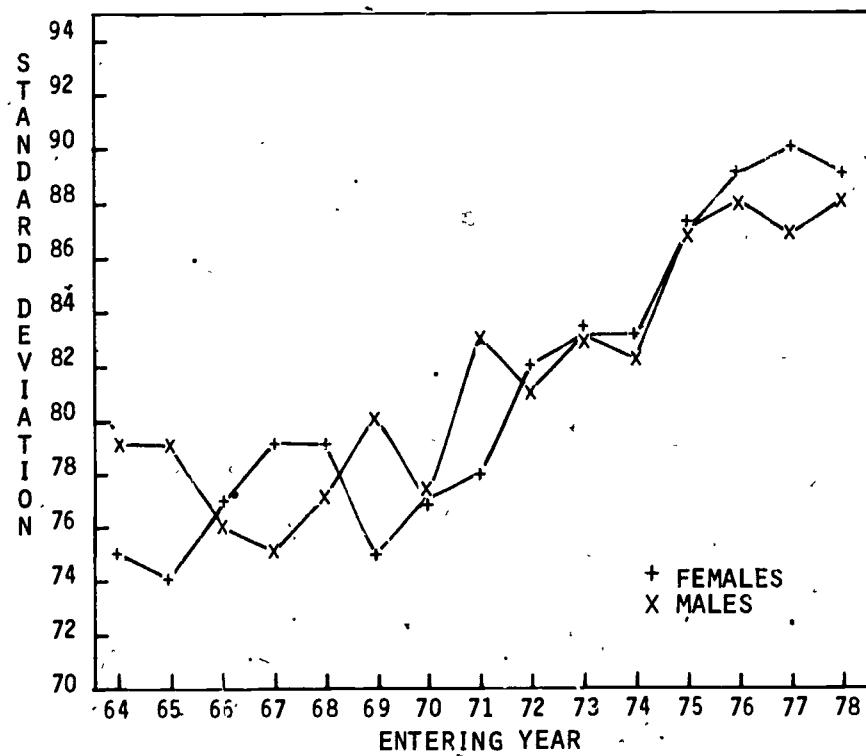
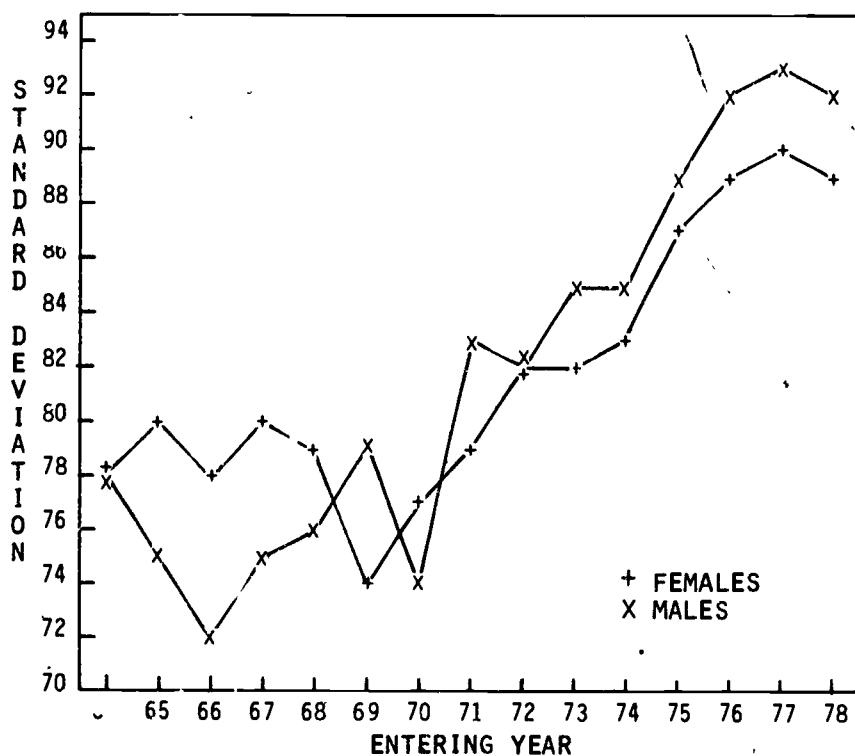


TABLE 6. Standard Deviation of SAT-M by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	78	75	72	75	76	79	74	83	82	85	85	89	92	93	92
Female	78	80	78	80	79	74	77	79	82	82	83	87	89	90	89

FIGURE 6. Standard Deviation of SAT-M by Sex and Year



Summary of Longitudinal Trend

The information presented so far suggests that grade inflation at the college level is a real phenomenon, but that it is not a recent one. Indeed, grade inflation seems to have been with us since at least 1964. During the 15 years covered in this study neither SAT-verbal nor SAT-mathematical scores exhibited any increasing tendencies, a fact which serves to support the idea that the increase in GPA is not due to a more able student body. An interesting discovery from these results is the increase in SAT-verbal and SAT-mathematical variability of freshman classes beginning with 1971. It was suggested that the change could be due to a change in admission policy. However, because of the self-selection of schools participating in the Validity Study Service, we could not rule out the possibility that the data from 1971 to 1978 came from schools with different admissions policies than the schools in previous years. This ambiguity permeates all our results. The fact that the male-female differential is fairly constant in all the variables examined suggests the trends are not mere sampling artifacts. The suggestion is weakened, however, by the fact that the male and female groups are not independent. That is, for the most part each school contributed a male and a female study.

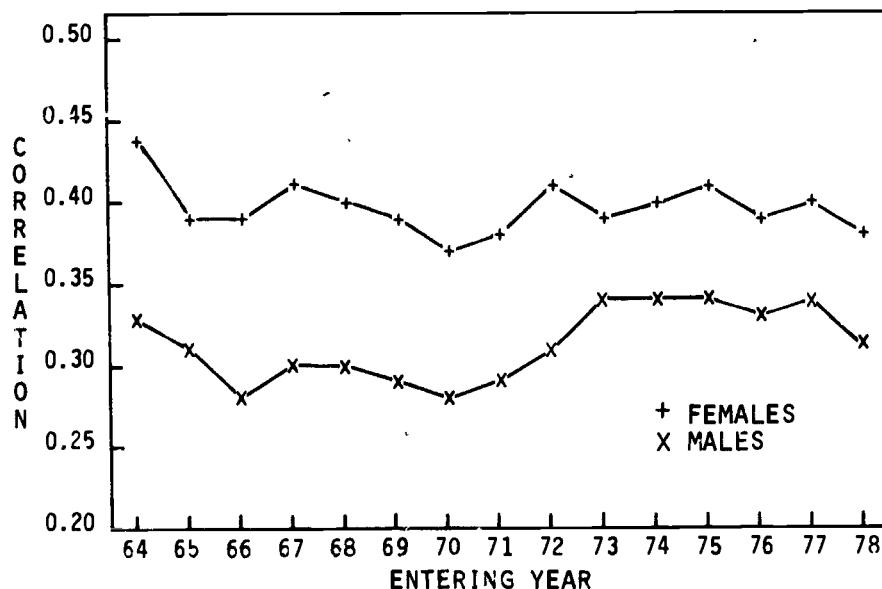
The Validity of SAT-Verbal Score and SAT-Mathematical Score

What has been the effect of grade inflation on the validity of SAT-verbal score and SAT-mathematical score? Table 7 and Figure 7 show the mean correlation for SAT-verbal score from 1964 to 1978. Perhaps the most striking finding is the large difference in correlation for males and females. The correlations for females are substantially higher in every year. It is as if for males performance in college depends more heavily on non-academic factors. Also, after 1970 there is a slight increasing trend in correlations for both males and females, coinciding with the increase in variability of SAT scores and GPA noted earlier.

TABLE 7. Correlation of SAT-V with Freshman GPA by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.33	.31	.28	.30	.30	.29	.28	.29	.31	.34	.34	.34	.33	.34	.31
Female	.44	.39	.39	.41	.40	.39	.37	.38	.41	.39	.40	.41	.39	.40	.38

FIGURE 7. Correlation of SAT-V with Freshman GPA by Sex and Year

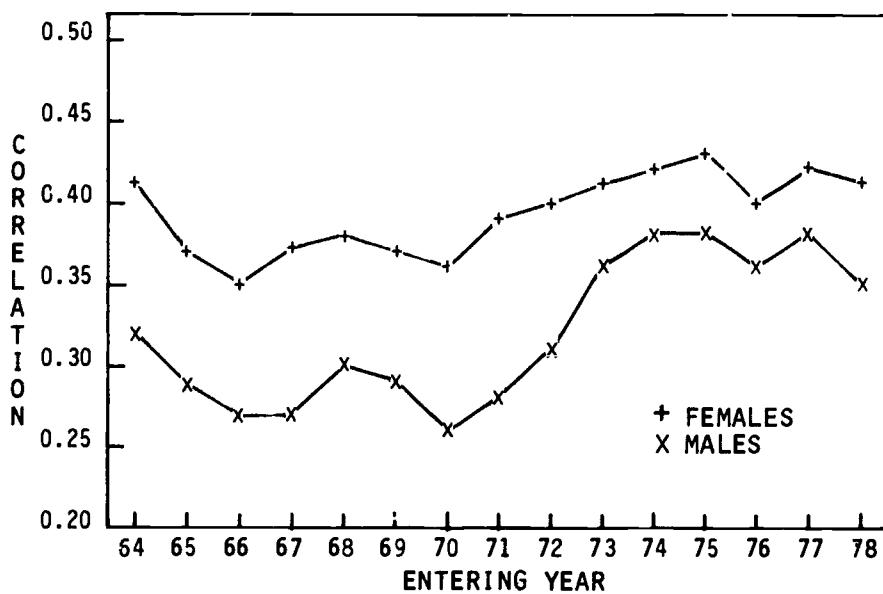


An almost identical trend is seen for the correlation of SAT-mathematical score with GPA. This information is shown in Table 8 and Figure 8.

TABLE 8. Correlation of SAT-M with Freshman GPA by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.32	.29	.27	.27	.30	.29	.26	.28	.31	.36	.38	.38	.36	.38	.35
Female	.41	.37	.35	.37	.38	.37	.36	.39	.40	.41	.42	.43	.40	.42	.41

FIGURE 8. Correlation of SAT-M with Freshman GPA by Sex and Year



The correlations of High School Record with GPA are shown in Table 9 and Figure 9. A distinct decreasing trend is obvious until 1973 when the correlations seem to stabilize. This trend has also been noted by others (Manning, 1977, p. 10). A possible explanation of such decline is that grade inflation at the high school level has resulted in a reduction of the variability of High School Record. (Since the schools being analyzed used different scales for High School Record, means and standard deviations were not computed.)

The net result of all the trends can be seen in the multiple correlation using SAT-verbal score, SAT-mathematical score, and High School Record as predictors. This information is seen in Table 10 and Figure 10 and shows that GPA has become slightly less predictable by these three variables. In fact, the trend for the correlation of High School Record and GPA is similar to the trend for multiple correlation. This is evidence of the fact that the prediction of college performance is still influenced most heavily by High School Record.

TABLE 9. Correlation of High School Record with Freshman GPA by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.49	.48	.46	.45	.45	.45	.44	.41	.45	.43	.44	.44	.43	.46	.44
Female	.57	.55	.56	.54	.52	.54	.50	.47	.50	.46	.47	.46	.46	.46	.46

FIGURE 9. Correlation of High School Record with Freshman GPA by Sex and Year

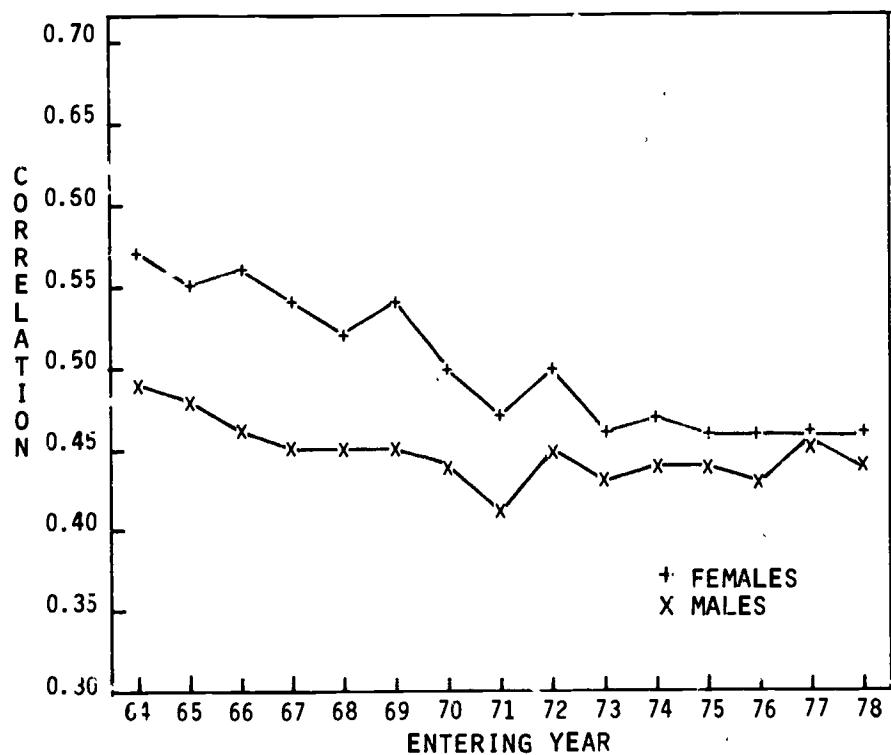
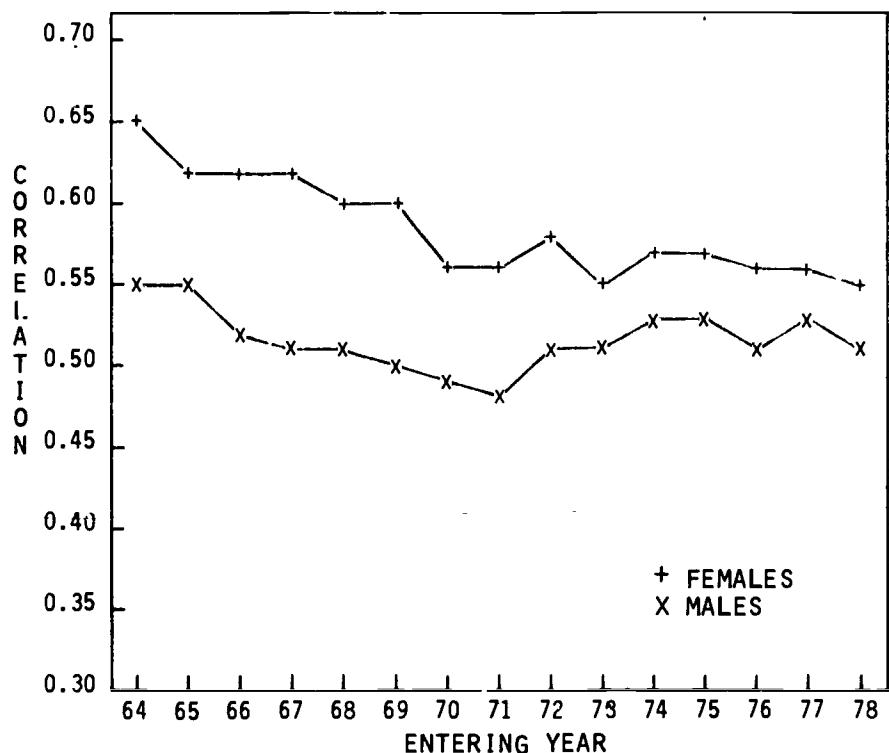


TABLE 10. Multiple R for SAT-V, SAT-M, and High School Record by Sex and Year

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.55	.55	.52	.51	.51	.50	.49	.48	.51	.51	.53	.53	.51	.53	.51
Female	.65	.62	.62	.62	.60	.60	.56	.56	.58	.55	.57	.57	.56	.56	.55

FIGURE 10. Multiple R for SAT-V, SAT-M, and High School Record by Sex and Year

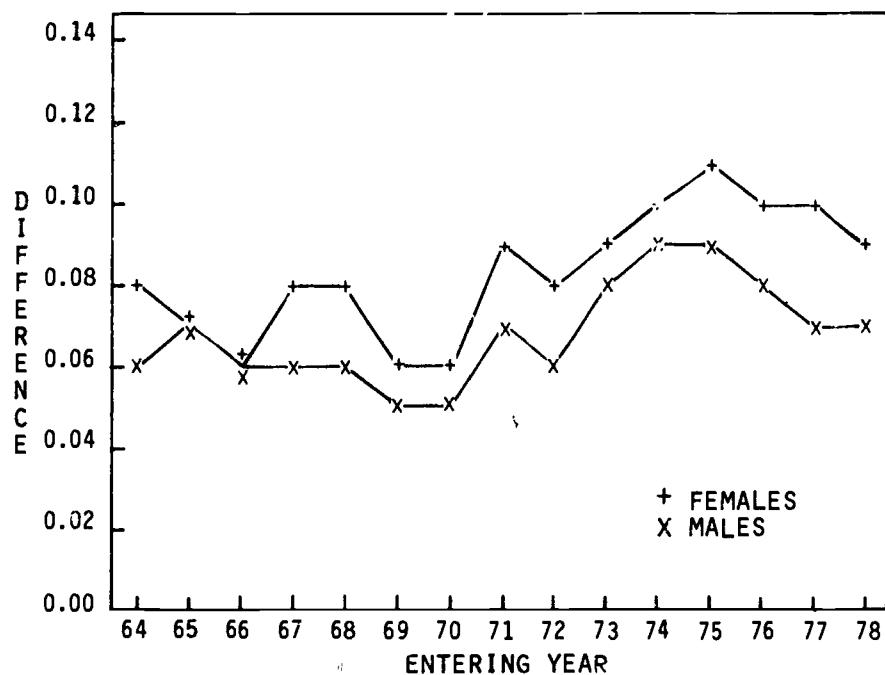


A rough indicator of the contribution of the SAT above and beyond the predictive power of High School Record is the difference between multiple R and the correlation of High School Record with GPA. Those differences are seen in Table 11 and Figure 11.

TABLE 11. Contribution of SAT, beyond High School Record to the Prediction of GPA

Sex	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Male	.06	.07	.06	.06	.06	.05	.05	.07	.06	.08	.09	.09	.08	.07	.07
Female	.08	.07	.06	.08	.08	.06	.06	.09	.08	.09	.10	.11	.10	.10	.09

FIGURE 11. Contribution of SAT beyond High School Record to the Prediction of GPA



Although the contribution of SAT is very comparable for males and females, there is a slight tendency for the contribution to be higher for females. It is evident from Figure 11 that the contribution of the SAT has fluctuated over the years. The clearest trend seems to be that the contribution of the SAT has been greatest in the most recent years. This increased contribution coincides with the lesser correlation of High School Record in the most recent years. Thus, while the overall predictability of GPA seems to have declined, the SAT's contribution, relative to High School Record, has increased.

ANALYSIS OF SELECTED SCHOOLS AT TWO POINTS IN TIME*

While the previous findings give an indication of the trends across schools no firm statements can be made as to what accounts for the trends since the sample of schools within each year is self-selected. To buttress the generalizability of these findings, the validity studies of a subset of schools at two points in time were selected for further study. The advantage of this design is that each college serves as its own control thus making possible somewhat stronger conclusions. Specifically, colleges which had participated in 1973 or 1974 and had a comparable study done at least five years before were selected. Some of the characteristics of these schools are tabulated in Table 12.

*These data were collected by S. Ford.

TABLE 12. Description of Schools by College Board Region, Type of College, and Percent Minority Enrollment

Descriptor	Male Studies	Female Studies
<u>College Board Region</u>		
New England	6	5
Middle States	9	8
Southern	13	14
Midwestern	5	3
Western	2	1
Southwestern	2	1
<u>Type of College</u> ¹		
Public	16	13
Private	21	19
<u>Percent Minority Enrollment</u> ²		
0-4	17	16
5-9	13	9
10-20	3	3
99	1	1

1. All colleges were four-year colleges.

2. Minority enrollment information was unavailable for three colleges.

The mean SAT-verbal score, SAT-mathematical score, and GPA by sex is shown in Table 13. The decline evident for SAT-verbal score is consistent with the earlier finding. The increase in GPA is fully consistent with the earlier results except that for this subsample the rate of inflation is somewhat higher for males.

TABLE 13. Mean SAT-V, SAT-M, and GPA by Sex

Variable	Male		Female	
	Recent	Previous	Recent	Previous
SAT-V	475	494	473	504
SAT-M	526	539	489	501
GPA	2.50	2.50	2.69	2.40

Taken together the results based on this subsample suggest that the increase in GPA can properly be attributed to inflation because aptitude as measured by SAT-verbal score and SAT-mathematical score has, in fact, declined. The key question for our purposes,

however, is the effect of grade inflation on validity. Table 14 shows the mean multiple R for the regression of GPA on SAT-verbal score and SAT-mathematical score for the 37 schools with paired male studies and the 32 schools with paired female studies. It is evident that the multiple R has increased substantially. Since the "previous" studies were from at least 1968, this finding is in line with the earlier results, which showed an increase in the correlation of SAT-verbal score and SAT-mathematical score with GPA beginning with the class entering in 1971.

TABLE 14. Mean Multiple Correlation Based on the Regression of GPA on SAT-V and SAT-M⁴

	Male		Female	
	Recent	Previous	Recent	Previous
Multiple R	.43	.35	.50	.44
Sample Size	37	37	32	32

SUMMARY AND CONCLUSION

This study was conducted to assess the effect of grade inflation at the college level on the validity of SAT scores. The study is based on a summarization of validation studies conducted voluntarily by schools for freshman classes from 1964 to 1978. To provide better controlled comparisons, a subsample of paired studies were also summarized and found to corroborate the findings based on the larger group. Based on these analyses the following conclusions are made.

1. Increases in grade point average at the college level appear to be due to grade inflation since they have occurred without a concomitant increase in SAT-verbal score and SAT-mathematical score. It is also concluded that grade inflation is not a recent phenomenon and has been observed since at least 1964.
2. The rate of grade inflation seems to have diminished since 1974 as indicated by the levelling-out of the GPA means.
3. If grade inflation is viewed as the addition of a constant to grades it will not affect validity since the addition of such a constant would not affect the correlation of GPA and SAT. Beyond a point, however, the variability of GPA may be restricted, causing a reduction in the correlation of GPA and SAT. The data presented do not suggest that point has been reached.
4. Grade inflation aside, the validity of SAT scores, as defined by the correlation of SAT and GPA, has fluctuated over the years. A more significant finding is that the usefulness of the SAT as measured by its contributions to the multiple correlation has increased. In other words, in the presence of declining validity of High School Record the SAT has become a more valuable tool for predicting academic success in college.

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